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| 10/084,435 | 02/28/2002 | Naoki Katoh | | 8143 |

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| EXAMINER |
|---|
| KIK, PHALLAKA |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2825 | |

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 10/084,435 | Applicant(s) KATOH ET AL. | |
|---|---|---|---|
| | Examiner Phallaka Kik | Art Unit 2825 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *21-23 and 26* is/are pending in the application, wherein claims 1-20, 24-25 are cancelled.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26* is/are rejected.

7)☒ Claim(s) *21-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Pri rity under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/582,327* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Response to Preliminary Amendment*

1. This Office Action responds to Applicant's preliminary amendment filed on 2/28/2002. Claims 21-23,26 are pending, wherein claims 1-20,24-25 have been cancelled and claims 22,23 have been amended.

### *Priority*

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/582,327 filed on June 23, 2000, which is a 371 of PCT/JP98/05688 filed on December 16, 1998. ***Specification***

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. The abstract of the disclosure is objected to because it does not include the designing method and storage medium for which applicant's invention is directed to. Also, the abstract is objected to because it is difficult to understand due the abstract having a single long sentence, wherein the paragraph should be broken down into at least two or three sentences for better readability and to more concisely convey applicant's invention. Correction is required. See MPEP § 608.01(b).

***Claim Objections***

5. **Claims 21-23,26** are objected to because of the following informalities:

As per **claim 21**, "a" (line 2, first occurrence only) should be replaced with --having-- for proper grammar; "component" (line 2) should be --components-- since the cell library usually have more than one circuit component (see line 7); --, each component-- should be inserted before "having" (line 2) for further clarification; "consumption power" (line 4) should be --power consumption-- for proper grammar; "and the like" (line 4) should be deleted, to clearly define what is being claimed; "consumption power" (line 7-8) should be --power consumption-- for proper grammar; "because of" (line 8) should be --said cells--for further clarification.

As per **claim 22**, "according to claim 21" (line 2) should be deleted and --according to claim 21-- should be inserted after "library" (line 3) claim 1 is not the design method but the storage medium; --said method-- should be inserted before "comprising" (line 4) for further clarification; "consumption power' (line 5) should be –power consumption-- for proper grammar. Also, the assigning step (lines 7-11) should be

rewritten as --assigning to a logic circuit one cell selected from among at least two kinds of cells registered in said library, while maintaining the same function and the same shape, based on the result of said calculated power consumption and delay in said signal path-- to eliminate redundancy for further clarity and to provide for essential structural relationship to the "cell library" of claim 21 which the claim incorporates.

As per **claim 23**, according to claim 21" (line 2) should be deleted and --according to claim 21-- should be inserted after "library" (line 3) claim 1 is not the design method but the storage medium; --said method-- should be inserted before "comprising" (line 3) for further clarification; "each with" (line 6) should be --, each element having-- for greater clarity; "consumption power" (line 8) should be --power consumption-- for proper grammar. Also, the "replacing" step (lines 10-14) should be --replacing a part of said designed logic circuit with cell(s) selected from said cell library, having low threshold value(s) while maintaining the same function and the same shape, based on the result of said calculated power consumption and delay in said signal path-- to eliminate redundancy for further clarity and to provide for the essential structural relationship to the "cell library" of claim 21 which the claim incorporates and to the essential structural relationship to the calculating step recited.

As per **claim 22-23**, the claims are also objected to for incorporating the above errors into the respective claims by claim dependency.

As per **claim 26**, the claim should be rewritten as follows to provide for the necessary steps (i.e., since the claim is a method) and for further clarification:

26. A designing method for a semiconductor integrated circuit comprising the steps of: [in which]

including a plurality of first circuits controlled by a clock signal [are included] in a signal path; and

inserting a second circuit constructed of a plurality of transistors with different threshold values [is inserted] in a path between the first circuits,

wherein a threshold value of each of the transistors constituting the second circuit is set so that a signal delay time between the first circuits does not exceed a given target value.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claim 26** is rejected under 35 U.S.C. 102(b) as being anticipated by **Mutoh et al.**, ("1V High-Speed Digital Circuit Technology With 0.5um Multi-Threshold CMOS", Proceedings of the Sixth Annual IEEE International ASIC Conference and Exhibit, 27 September 1993, pp. 186-189).

As per **claim 26**, all of the elements of the claims are illustrated in Figure 3 (page 187) wherein the first circuits correspond to the circuits G1 (enclosed in dotted lines)

controlled by clock signal clk, having a low threshold voltage, and the second circuit(s) being added or inserted as described on page 187, corresponding to circuit G2 and G3 having a different threshold values (i.e., high threshold values).

***Allowable Subject Matter***

8. **Claims 21-23** would be allowable if rewritten or amended to overcome the objections due to minor informalities, set forth in this Office action.

9. The following is a statement of reasons for the indication of allowable subject matter:

As per **claims 21-23**, the independent claim 21, which the claims depend, recites storage medium on which there is stored a cell library having logic circuit components, comprising the inventive features in which the cell library is registered with at least two kinds of cells which are different in delay and power consumption, each cell being constructed of switching elements which have different threshold voltages while having the same function and shape, as claimed. The prior arts made of record teach various circuit cells designs, including those cells stored in cell library, which have different threshold voltages for the same or equivalent function, designed for optimal power and/or delay requirements (see especially **Mutoh et al.**, "1V High-Speed Digital Circuit Technology With 0.5um Multi-Threshold CMOS", Proceedings of the Sixth Annual IEEE International ASIC Conference and Exhibit, 27 September 1993, pp. 186-189, especially page 187; **Jyu et al.**, US Patent No. 6,209,122, especially col. 22-25 and col. 28-29; **Jyu et al.**, US Patent NO. 5,880,967, especially col. 3, lines 50-62; col. 20, 23-25; **Teene**, US Patent No. 6,272,668, especially col. 5-6; col. 2, line 36 to col. 3, line 18;

**Carruthers et al.**, US Patent No. 6,035,106, especially col. 7, line 60 to col. 8, line 54; **Yano et al.**, US Patent No. 5,872,716, especially col. 13, lines 46-55; col. 15, lines 27-44; **Sato et al.**, US Patent No. 6,009,248, especially col. 13, line 42 to col. 14, line 56; **Reyes et al.**, US Patent No. 5,774,367, especially Figure 2 and col. 5, lines 14-45). However, none of the prior arts made of record teach or suggest that these cells also have the same shape while maintaining the same function and being constructed of switching elements which have different threshold voltages, as claimed. Accordingly, the claimed invention is novel and un-obvious over the prior arts made of record.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Accordingly, Applicant is requested herein to consider them carefully in response to the Office Action. In particular, the following prior arts are most relevant:

**Reyes et al.**, US Patent No. 5,774,367, especially Figure 2 and col. 5, lines 14-45;

**Vam Der Werf**, US Patent No. 5,898,742, especially col. 1, line 49 to col. 2, line 35;

**Jyu et al.**, US Patent No. 6,209,122, especially col. 22-25 and col. 28-29; and

**Jyu et al.**, US Patent NO. 5,880,967, especially col. 3, lines 50-62; col. 20, 23-25.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phallaka Kik whose telephone number is 703-306-3039. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

**Any response to this action should be mailed to:**

Commissioner for Patents

P. O. Box 1450

Alexandria, VA 22313-1450

**or faxed to:**

703-872-9318 (for Before-Final) and 703-872-9319 (for After-Final) for formal communications intended for entry,

**Or:**

(703) 746-4111 (for informal or draft communications, please label "PROPOSED" or "DRAFT" and let the examiner know prior to faxing)

Hand-delivered responses should be brought to Crystal Plaza 4, 2201 South Clark Place, Arlington, VA 22202, Fourth Floor (Receptionist).

**12. Applicant should note that effective May 1, 2003, the United States Patent and Trademark Office has a new Commissioner for Patents address for transitioning to the new Office location in Alexandria, VA, wherein correspondence in patent-related matters to organizations reporting to the Commissioner for Patents must now be addressed to:**

**Commissioner for Patents**

**P.O. Box 1450**

**Alexandria, VA 22313-1450**

PK
May 15, 2003

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